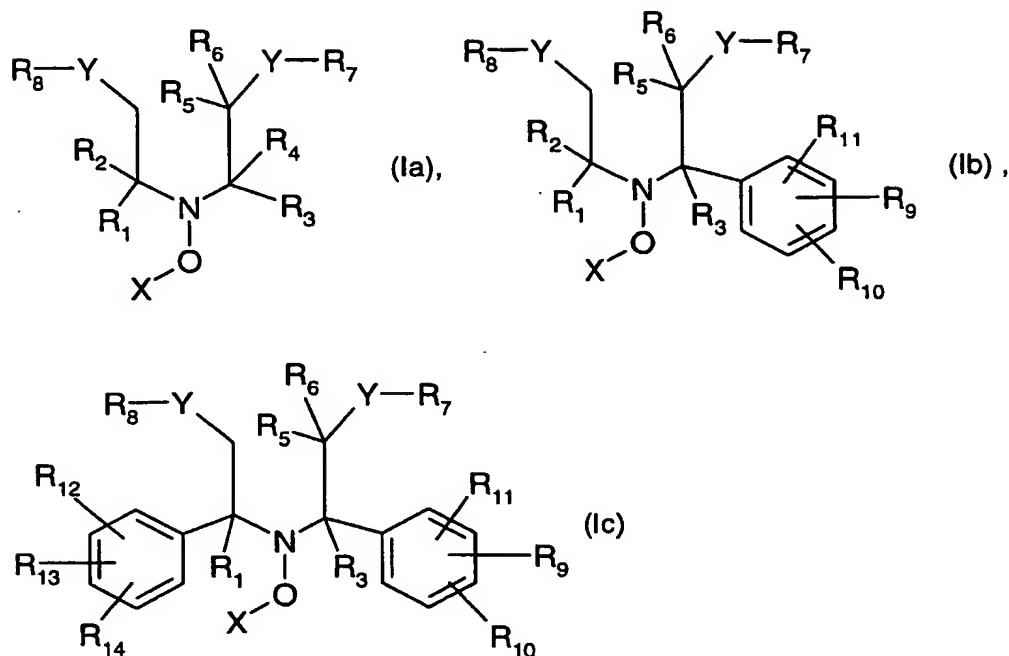


Claims

1. A compound of formula Ia, Ib, or Ic



wherein

Y is O or NR<sub>101</sub> and R<sub>101</sub> is H or C<sub>1</sub>-C<sub>18</sub>alkyl or R<sub>7</sub> and/or R<sub>8</sub> and R<sub>101</sub> together with the nitrogen atom to which they are bound form a 5 or 6 membered heterocyclic ring;

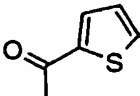
R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> independently are benzyl, C<sub>1</sub>-C<sub>18</sub>alkyl, C<sub>2</sub>-C<sub>18</sub>alkenyl which are unsubstituted or substituted by OH or by a group -O-C(O)-R<sub>102</sub>; or C<sub>2</sub>-C<sub>18</sub>alkyl which is interrupted by at least one O atom or a group NR<sub>102</sub> wherein R<sub>102</sub> is hydrogen, C<sub>1</sub>-C<sub>18</sub>alkyl or C<sub>6</sub>-C<sub>10</sub>aryl;

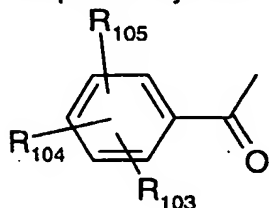
or R<sub>1</sub> and R<sub>2</sub> together with the carbon atom to which they are bound form a C<sub>5</sub>-C<sub>12</sub>cycloalkyl group; or in formula Ia R<sub>3</sub> and R<sub>4</sub> together with the carbon atom to which they are bound form a C<sub>5</sub>-C<sub>12</sub>cycloalkyl group;

R<sub>4</sub> is C<sub>2</sub>-C<sub>12</sub>alkyl;

R<sub>5</sub> and R<sub>6</sub> are independently H, C<sub>1</sub>-C<sub>18</sub>alkyl, C<sub>2</sub>-C<sub>18</sub>alkenyl, benzyl, C<sub>5</sub>-C<sub>12</sub>cycloalkyl or phenyl;

R<sub>7</sub> and R<sub>8</sub> independently are H, C<sub>1</sub>-C<sub>18</sub>alkyl, C<sub>2</sub>-C<sub>18</sub>alkenyl, C<sub>5</sub>-C<sub>12</sub>cycloalkyl or a group

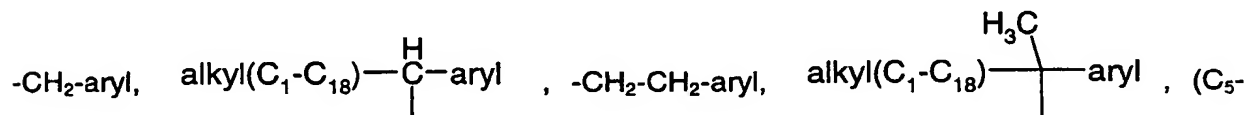
-C(O)-(C<sub>1</sub>-C<sub>18</sub>)alkyl, -C(O)-O-(C<sub>1</sub>-C<sub>18</sub>)alkyl, -C(O)-O-phenyl, -C(O)-C(O)-OH, -C(O)-C(O)-NH-(C<sub>1</sub>-C<sub>18</sub>)alkyl, -C(S)-S-(C<sub>1</sub>-C<sub>18</sub>)alkyl, , -SiR<sub>a</sub>R<sub>b</sub>R<sub>c</sub> wherein R<sub>a</sub>, R<sub>b</sub>, R<sub>c</sub> independently are C<sub>1</sub>-C<sub>18</sub>alkyl or R<sub>7</sub> and R<sub>8</sub> are the following group



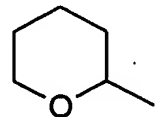
wherein R<sub>103</sub>, R<sub>104</sub> and R<sub>105</sub> independently are H, C<sub>1</sub>-C<sub>8</sub>alkyl, C<sub>1</sub>-C<sub>8</sub>alkoxy, C<sub>1</sub>-C<sub>8</sub>alkylthio, -O-C(O)-(C<sub>1</sub>-C<sub>8</sub>)alkyl, -O-C(O)-(C<sub>6</sub>-C<sub>10</sub>)aryl, nitro, cyano or halogen;

R<sub>9</sub>, R<sub>10</sub>, R<sub>11</sub>, R<sub>12</sub>, R<sub>13</sub> and R<sub>14</sub> independently are H, OH, C<sub>1</sub>-C<sub>8</sub>alkoxy, C<sub>1</sub>-C<sub>8</sub>alkyl, SH, C<sub>1</sub>-C<sub>8</sub>alkylthio,

-O-C(O)-(C<sub>1</sub>-C<sub>8</sub>)alkyl, -O-C(O)-(C<sub>6</sub>-C<sub>10</sub>)aryl, nitro, cyano, halogen or a group NR<sub>106</sub>R<sub>107</sub> wherein R<sub>106</sub> and R<sub>107</sub> independently are hydrogen, C<sub>1</sub>-C<sub>18</sub>alkyl or C<sub>6</sub>-C<sub>10</sub>aryl or together with the nitrogen atom to which they are bound form a 5 or 6 membered heterocyclic ring; and X is selected from the group consisting of



C<sub>6</sub>cycloalkyl)<sub>2</sub>CCN, (C<sub>1</sub>-C<sub>12</sub>alkyl)<sub>2</sub>CCN, -CH<sub>2</sub>CH=CH<sub>2</sub>, (C<sub>1</sub>-C<sub>12</sub>)alkyl-CR<sub>20</sub>-C(O)-(C<sub>1</sub>-C<sub>12</sub>)alkyl, (C<sub>1</sub>-C<sub>12</sub>)alkyl-CR<sub>20</sub>-C(O)-(C<sub>6</sub>-C<sub>10</sub>)aryl, (C<sub>1</sub>-C<sub>12</sub>)alkyl-CR<sub>20</sub>-C(O)-O-R<sub>21</sub>, (C<sub>1</sub>-C<sub>12</sub>)alkyl-CR<sub>20</sub>-C(O)-phenoxy, (C<sub>1</sub>-C<sub>12</sub>)alkyl-CR<sub>20</sub>-C(O)-N-di(C<sub>1</sub>-C<sub>12</sub>)alkyl, (C<sub>1</sub>-C<sub>12</sub>)alkyl-CR<sub>20</sub>-CO-NH(C<sub>1</sub>-C<sub>12</sub>)alkyl, (C<sub>1</sub>-C<sub>12</sub>)alkyl-CR<sub>20</sub>-CO-NH<sub>2</sub>, -CH<sub>2</sub>CH=CH-CH<sub>3</sub>, -CH<sub>2</sub>-C(CH<sub>3</sub>)=CH<sub>2</sub>, -CH<sub>2</sub>-CH=CH-

phenyl, -CH<sub>2</sub>-C≡CH, 3-cyclohexenyl, 3-cyclopentenyl, ,



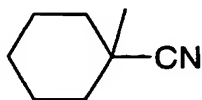
R<sub>20</sub> is hydrogen or C<sub>1</sub>-C<sub>12</sub>alkyl;

$R_{21}$  is  $C_1$ - $C_{18}$ alkyl or  $C_2$ - $C_{18}$ alkyl which is interrupted by at least one O atom or a group  $NR_{102}$  wherein  $R_{102}$  is hydrogen,  $C_1$ - $C_{18}$ alkyl or  $C_6$ - $C_{10}$ aryl;

the alkyl groups are unsubstituted or substituted with one or more -OH, -COOH, -O( $C_1$ - $C_8$ alkyl),  $NR_{106}R_{107}$  or -COR<sub>20</sub> groups wherein  $R_{20}$ ,  $R_{106}$  and  $R_{107}$  have the meanings as defined above;

the aryl groups are phenyl or naphthyl which are unsubstituted or substituted with  $C_1$ - $C_{12}$ alkyl, halogen,  $C_1$ - $C_{12}$ alkoxy,  $C_1$ - $C_{12}$ alkylthio,  $C_1$ - $C_{12}$ alkylcarbonyl, glycidyoxy, OH, SH, -COOH or -COO( $C_1$ - $C_{12}$ )alkyl.

2. A compound according to claim 1 wherein X is selected from the group consisting of -CH<sub>2</sub>-phenyl, CH<sub>3</sub>CH-phenyl, (CH<sub>3</sub>)<sub>2</sub>C-phenyl, ( $C_5$ - $C_6$ cycloalkyl)<sub>2</sub>CCN, (CH<sub>3</sub>)<sub>2</sub>CCN,

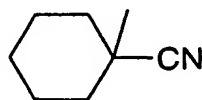


, -CH<sub>2</sub>CH=CH<sub>2</sub>, CH<sub>3</sub>CH-CH=CH<sub>2</sub>, ( $C_1$ - $C_8$ alkyl)CR<sub>20</sub>-C(O)-phenyl, ( $C_1$ -

$C_8$ )alkyl-CR<sub>20</sub>-C(O)-( $C_1$ - $C_8$ )alkoxy, ( $C_1$ - $C_8$ )alkyl-CR<sub>20</sub>-C(O)-( $C_1$ - $C_8$ )alkyl, ( $C_1$ - $C_8$ )alkyl-CR<sub>20</sub>-C(O)-N-di( $C_1$ - $C_8$ )alkyl, ( $C_1$ - $C_8$ )alkyl-CR<sub>20</sub>-C(O)-NH( $C_1$ - $C_8$ )alkyl and ( $C_1$ - $C_8$ )alkyl-CR<sub>20</sub>-C(O)-NH<sub>2</sub>, wherein

$R_{20}$  is hydrogen or ( $C_1$ - $C_8$ )alkyl.

3. A compound according to claim 2 wherein X is selected from the group consisting of -CH<sub>2</sub>-phenyl, CH<sub>3</sub>CH-phenyl, (CH<sub>3</sub>)<sub>2</sub>C-phenyl, ( $C_5$ - $C_6$ cycloalkyl)<sub>2</sub>CCN, (CH<sub>3</sub>)<sub>2</sub>CCN,



, -CH<sub>2</sub>CH=CH<sub>2</sub>, CH<sub>3</sub>CH-CH=CH<sub>2</sub>, ( $C_1$ - $C_4$ alkyl)CR<sub>20</sub>-C(O)-phenyl, ( $C_1$ -

$C_4$ )alkyl-CR<sub>20</sub>-C(O)-( $C_1$ - $C_4$ )alkoxy, ( $C_1$ - $C_4$ )alkyl-CR<sub>20</sub>-C(O)-( $C_1$ - $C_4$ )alkyl, ( $C_1$ - $C_4$ )alkyl-CR<sub>20</sub>-C(O)-N-di( $C_1$ - $C_4$ )alkyl, ( $C_1$ - $C_4$ )alkyl-CR<sub>20</sub>-C(O)-NH( $C_1$ - $C_4$ )alkyl and ( $C_1$ - $C_4$ )alkyl-CR<sub>20</sub>-C(O)-NH<sub>2</sub>, wherein

$R_{20}$  is hydrogen or ( $C_1$ - $C_4$ )alkyl.

4. A compound according to claim 1 wherein Y is O and wherein in formula Ia  $R_4$  is  $C_2$ - $C_6$ alkyl or  $R_3$  and  $R_4$  together with the carbon atom to which they are bound form a 5 to 7 membered cycloalkyl ring.

5. A compound according to claim 1 wherein

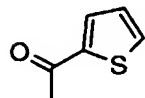
$R_1$ ,  $R_2$  and  $R_3$  are  $C_1$ - $C_5$ alkyl; or in formula 1a  $R_3$  and  $R_4$  together with the carbon atom to which they are bound form a  $C_5$ - $C_6$ cycloalkyl group;

$R_4$  is  $C_2$ - $C_6$ alkyl;

$R_5$  and  $R_6$  are H;

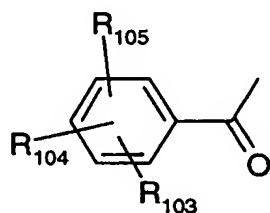
$R_7$  and  $R_8$  independently are H,  $C_1$ - $C_{18}$ alkyl, allyl, benzyl,  $C_5$ - $C_{12}$ cycloalkyl or a group

$-C(O)-(C_1-C_{18})$ alkyl,  $-C(O)-O-(C_1-C_{18})$ alkyl,  $-C(O)-C(O)-OH$ ,  $-C(S)-S-(C_1-C_{18})$ alkyl,



,  $-SiR_aR_bR_c$  wherein  $R_a$ ,  $R_b$ ,  $R_c$  independently are  $C_1$ - $C_{18}$ alkyl or  $R_7$  and  $R_8$  are

one of the following groups



wherein  $R_{103}$ ,  $R_{104}$  and  $R_{105}$  independently

are H,  $C_1$ - $C_8$ alkoxy,  $C_1$ - $C_8$ alkylthio,  $-O-C(O)-(C_1-C_8)$ alkyl, nitro, cyano, halogen,  $C_1$ - $C_8$ alkyl;

$R_9$ ,  $R_{10}$  and  $R_{11}$  independently are H,  $C_1$ - $C_8$ alkoxy,  $C_1$ - $C_8$ alkylthio,  $-O-C(O)-(C_1-C_8)$ alkyl, nitro, cyano, halogen or  $C_1$ - $C_8$ alkyl; and

X is as defined in claim 1.

6. A compound of formula 1b or 1c according to claim 1.

7. A compound of formula 1b according to claim 1 wherein

Y is O;

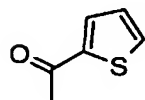
$R_1$  and  $R_2$  are  $C_1$ - $C_5$ alkyl, or together with the carbon atom to which they are bound form a  $C_5$ - $C_7$ cycloalkyl group;

$R_3$  is methyl, ethyl or propyl;

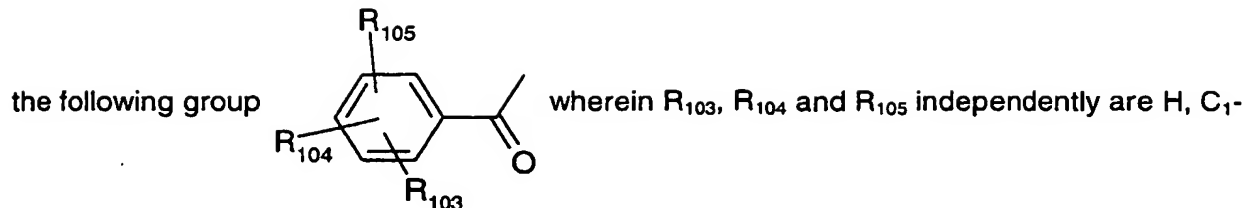
$R_5$  and  $R_6$  are H;

$R_7$  and  $R_8$  independently are H,  $C_1$ - $C_{18}$ alkyl, allyl, benzyl,  $C_5$ - $C_{12}$ cycloalkyl or a group

$-C(O)-(C_1-C_{18})$ alkyl,  $-C(O)-O-(C_1-C_{18})$ alkyl,  $-C(O)-C(O)-OH$ ,  $-C(S)-S-(C_1-C_{18})$ alkyl,



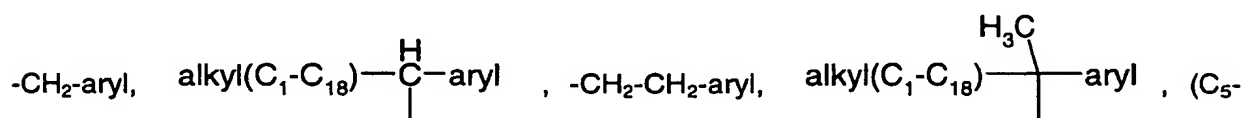
,  $-SiR_aR_bR_c$  wherein  $R_a$ ,  $R_b$ ,  $R_c$  independently are  $C_1$ - $C_{18}$ alkyl or  $R_7$  and  $R_8$  are



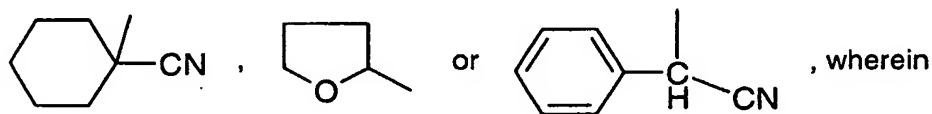
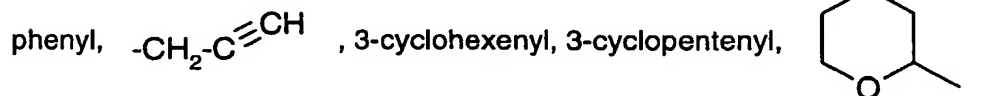
$C_8$ alkoxy,  $C_1$ - $C_8$ alkylthio,  $-O-C(O)-(C_1-C_8)alkyl$ , nitro, cyano, halogen,  $C_1$ - $C_8$ alkyl;

$R_9$ ,  $R_{10}$  and  $R_{11}$  independently are H,  $C_1$ - $C_8$ alkoxy,  $C_1$ - $C_8$ alkylthio,  $-O-C(O)-(C_1-C_8)alkyl$ , nitro, cyano, halogen or  $C_1$ - $C_8$ alkyl; and

X is selected from the group consisting of



$C_6$ cycloalkyl) $_2CCN$ ,  $(C_1-C_{12}alkyl)_2CCN$ ,  $-CH_2CH=CH_2$ ,  $(C_1-C_{12})alkyl-CR_{20}-C(O)-(C_1-C_{12})alkyl$ ,  $(C_1-C_{12})alkyl-CR_{20}-C(O)-(C_6-C_{10})aryl$ ,  $(C_1-C_{12})alkyl-CR_{20}-C(O)-O-R_{21}$ ,  $(C_1-C_{12})alkyl-CR_{20}-C(O)-phenoxy$ ,  $(C_1-C_{12})alkyl-CR_{20}-C(O)-N-di(C_1-C_{12})alkyl$ ,  $(C_1-C_{12})alkyl-CR_{20}-CO-NH(C_1-C_{12})alkyl$ ,  $(C_1-C_{12})alkyl-CR_{20}-CO-NH_2$ ,  $-CH_2CH=CH-CH_3$ ,  $-CH_2-C(CH_3)=CH_2$ ,  $-CH_2-CH=CH-$



$R_{20}$  is hydrogen or  $C_1$ - $C_{12}$ alkyl;

$R_{21}$  is  $C_1$ - $C_{18}$ alkyl or  $C_2$ - $C_{18}$ alkyl which is interrupted by at least one O atom or a group  $NR_{102}$  wherein  $R_{102}$  is hydrogen,  $C_1$ - $C_{18}$ alkyl or  $C_6$ - $C_{10}$ aryl;

the alkyl groups are unsubstituted or substituted with one or more  $-OH$ ,  $-COOH$ ,  $-O(C_1-C_8alkyl)$ ,  $NR_{106}R_{107}$  or  $-COR_{20}$  groups wherein  $R_{20}$ ,  $R_{106}$  and  $R_{107}$  have the meanings as defined above;

the aryl groups are phenyl or naphthyl which are unsubstituted or substituted with  $C_1$ - $C_{12}$ alkyl, halogen,  $C_1$ - $C_{12}$ alkoxy,  $C_1$ - $C_{12}$ alkylcarbonyl, glycidyloxy,  $OH$ ,  $-COOH$  or  $-COO(C_1-C_{12})alkyl$ .

8. A polymerizable composition, comprising

- a) at least one ethylenically unsaturated monomer or oligomer, and
- b) a compound according to formula (Ia) (Ib) or (Ic) according to claim 1.

9. A process for preparing an oligomer, a cooligomer, a polymer or a copolymer (block or random) by free radical polymerization of at least one ethylenically unsaturated monomer or oligomer, which comprises (co)polymerizing the monomer or monomers/oligomers in the presence of an initiator compound of formula (Ia), (Ib) or (Ic) according to claim 1 under reaction conditions capable of effecting scission of the O-X bond to form two free radicals, the radical  $\bullet X$  being capable of initiating polymerization.

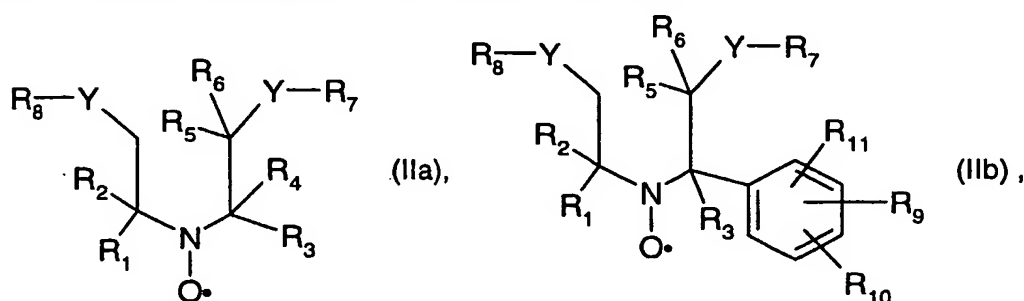
10. A process according to claim 9 wherein the scission of the O-X bond is effected by ultrasonic treatment, heating or exposure to electromagnetic radiation, ranging from  $\gamma$  to microwaves.

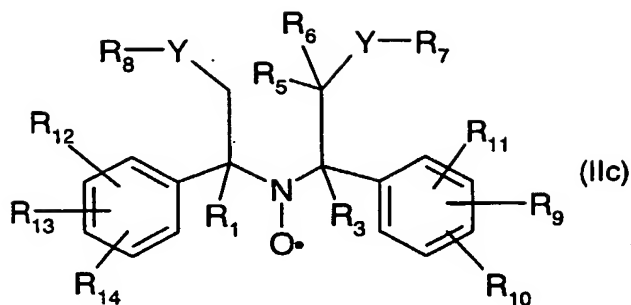
11. A process according to claim 10 wherein the scission of the O-X bond is effected by heating and takes place at a temperature of between 50°C and 160°C.

12. A process according to claim 9 wherein the compound is present in an amount from 0.001 mol-% to 20 mol-%, based on the monomer or monomer mixture.

13. A polymerizable composition, comprising

- a) at least one ethylenically unsaturated monomer or oligomer, and
- b) a compound according to formula (IIa) (IIb) or (IIc)





wherein

Y is O or NR<sub>101</sub> and R<sub>101</sub> is H or C<sub>1</sub>-C<sub>18</sub>alkyl or R<sub>7</sub> and/or R<sub>8</sub> and R<sub>101</sub> together with the nitrogen atom to which they are bound form a 5 or 6 membered heterocyclic ring;

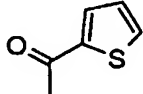
R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> independently are benzyl, C<sub>1</sub>-C<sub>18</sub>alkyl, C<sub>2</sub>-C<sub>18</sub>alkenyl which are unsubstituted or substituted by OH or a by group -O-C(O)-R<sub>102</sub>; or C<sub>2</sub>-C<sub>18</sub>alkyl which is interrupted by at least one O atom or a group NR<sub>102</sub> wherein R<sub>102</sub> is hydrogen, C<sub>1</sub>-C<sub>18</sub>alkyl or C<sub>6</sub>-C<sub>10</sub>aryl;

or R<sub>1</sub> and R<sub>2</sub> together with the carbon atom to which they are bound form a C<sub>5</sub>-C<sub>12</sub>cycloalkyl group; or in formula Ia R<sub>3</sub> and R<sub>4</sub> together with the carbon atom to which they are bound form a C<sub>5</sub>-C<sub>12</sub>cycloalkyl group;

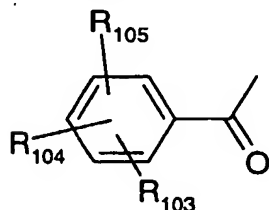
R<sub>4</sub> is C<sub>2</sub>-C<sub>12</sub>alkyl;

R<sub>5</sub> and R<sub>6</sub> are independently H, C<sub>1</sub>-C<sub>18</sub>alkyl, C<sub>2</sub>-C<sub>18</sub>alkenyl, benzyl, C<sub>5</sub>-C<sub>12</sub>cycloalkyl or phenyl;

R<sub>7</sub> and R<sub>8</sub> independently are H, C<sub>1</sub>-C<sub>18</sub>alkyl, C<sub>2</sub>-C<sub>18</sub>alkenyl, C<sub>5</sub>-C<sub>12</sub>cycloalkyl or a group -C(O)-(C<sub>1</sub>-C<sub>18</sub>)alkyl, -C(O)-O-(C<sub>1</sub>-C<sub>18</sub>)alkyl, -C(O)-O-phenyl, -C(O)-C(O)-OH, -C(O)-C(O)-NH-

(C<sub>1</sub>-C<sub>18</sub>alkyl), -C(S)-S-(C<sub>1</sub>-C<sub>18</sub>)alkyl, , -SiR<sub>a</sub>R<sub>b</sub>R<sub>c</sub> wherein R<sub>a</sub>, R<sub>b</sub>, R<sub>c</sub>

independently are C<sub>1</sub>-C<sub>18</sub>alkyl or R<sub>7</sub> and R<sub>8</sub> are the following group



wherein R<sub>103</sub>, R<sub>104</sub> and R<sub>105</sub> independently are H, C<sub>1</sub>-C<sub>8</sub>alkyl, C<sub>1</sub>-

C<sub>8</sub>alkoxy, C<sub>1</sub>-C<sub>8</sub>alkylthio, -O-C(O)-(C<sub>1</sub>-C<sub>8</sub>)alkyl, -O-C(O)-(C<sub>6</sub>-C<sub>10</sub>)aryl, nitro, cyano or halogen;

R<sub>9</sub>, R<sub>10</sub>, R<sub>11</sub>, R<sub>12</sub>, R<sub>13</sub> and R<sub>14</sub> independently are H, OH, C<sub>1</sub>-C<sub>8</sub>alkoxy, C<sub>1</sub>-C<sub>8</sub>alkyl, SH, C<sub>1</sub>-C<sub>8</sub>alkylthio,

c) a source of free radicals capable of initiating polymerization of ethylenically unsaturated monomers.

**15. A compound of formula IIb**



Y is O or NR<sub>101</sub> and R<sub>101</sub> is H or C<sub>1</sub>-C<sub>18</sub>alkyl or R<sub>7</sub> and R<sub>101</sub> together with the nitrogen atom to which they are bound form a 5 or 6 membered heterocyclic ring;

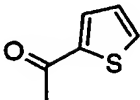
**R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> independently are benzyl, C<sub>1</sub>-C<sub>18</sub>alkyl, C<sub>2</sub>-C<sub>18</sub>alkenyl which are unsubstituted or substituted by OH or a group -O-C(O)-R<sub>102</sub>; or C<sub>2</sub>-C<sub>18</sub>alkyl which is interrupted by at least one O atom or a group NR<sub>102</sub> wherein R<sub>102</sub> is hydrogen, C<sub>1</sub>-C<sub>18</sub>alkyl or C<sub>6</sub>-C<sub>10</sub>aryl; or R<sub>1</sub> and R<sub>2</sub> together with the carbon atom to which they are bound form a C<sub>5</sub>-C<sub>12</sub>cycloalkyl group;**

R<sub>5</sub> and R<sub>6</sub> are independently H, C<sub>1</sub>-C<sub>18</sub>alkyl, C<sub>2</sub>-C<sub>18</sub>alkenyl, benzyl, C<sub>5</sub>-C<sub>12</sub>cycloalkyl or phenyl;

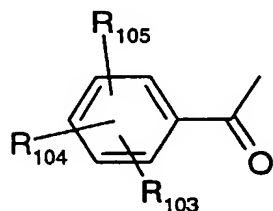
**R<sub>7</sub> and R<sub>8</sub> independently are H, C<sub>1</sub>-C<sub>18</sub>alkyl, C<sub>2</sub>-C<sub>18</sub>alkenyl, C<sub>5</sub>-C<sub>12</sub>cycloalkyl or a group**



-C(O)-(C<sub>1</sub>-C<sub>18</sub>)alkyl, -C(O)-O-(C<sub>1</sub>-C<sub>18</sub>)alkyl, -C(O)-O-phenyl, -C(O)-C(O)-OH, -C(O)-C(O)-NH-

(C<sub>1</sub>-C<sub>18</sub>)alkyl), -C(S)-S-(C<sub>1</sub>-C<sub>18</sub>)alkyl,  , -SiR<sub>a</sub>R<sub>b</sub>R<sub>c</sub> wherein R<sub>a</sub> , R<sub>b</sub> , R<sub>c</sub>

independently are C<sub>1</sub>-C<sub>18</sub>alkyl or R<sub>7</sub> and R<sub>8</sub> are one of the following groups



wherein R<sub>103</sub>, R<sub>104</sub> and R<sub>105</sub> independently are H, C<sub>1</sub>-C<sub>8</sub>alkyl, C<sub>1</sub>-

C<sub>8</sub>alkoxy, C<sub>1</sub>-C<sub>8</sub>alkylthio, -O-C(O)-(C<sub>1</sub>-C<sub>8</sub>)alkyl, -O-C(O)-(C<sub>6</sub>-C<sub>10</sub>)aryl, nitro, cyano or halogen;

R<sub>9</sub>, R<sub>10</sub> and R<sub>11</sub> independently are H, OH, C<sub>1</sub>-C<sub>8</sub>alkoxy, C<sub>1</sub>-C<sub>8</sub>alkyl, SH, C<sub>1</sub>-C<sub>8</sub>alkylthio, -O-C(O)-(C<sub>1</sub>-C<sub>8</sub>)alkyl, -O-C(O)-(C<sub>6</sub>-C<sub>10</sub>)aryl, nitro, cyano, halogen or a group NR<sub>106</sub>R<sub>107</sub> wherein R<sub>106</sub> and R<sub>107</sub> independently are hydrogen, C<sub>1</sub>-C<sub>18</sub>alkyl or C<sub>6</sub>-C<sub>10</sub>aryl or together with the nitrogen atom to which they are bound form a 5 or 6 membered heterocyclic ring.

16. A compound of formula IIb according to claim 15 wherein

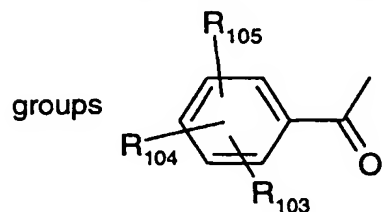
Y is O;

R<sub>1</sub> and R<sub>2</sub> are -CH<sub>3</sub>, or together with the carbon atom to which they are bound form a C<sub>5</sub>-C<sub>7</sub>cycloalkyl group;

R<sub>3</sub> is methyl, ethyl or propyl;

R<sub>5</sub> and R<sub>6</sub> are H;

R<sub>7</sub> and R<sub>8</sub> independently are H, C<sub>1</sub>-C<sub>18</sub>alkyl, allyl, benzyl, C<sub>5</sub>-C<sub>12</sub>cycloalkyl or a group -C(O)-(C<sub>1</sub>-C<sub>18</sub>)alkyl, -C(O)-O-(C<sub>1</sub>-C<sub>18</sub>)alkyl, -C(O)-C(O)-OH, -C(S)-S-(C<sub>1</sub>-C<sub>18</sub>)alkyl, -SiR<sub>a</sub>R<sub>b</sub>R<sub>c</sub> wherein R<sub>a</sub> , R<sub>b</sub> , R<sub>c</sub> independently are C<sub>1</sub>-C<sub>18</sub>alkyl or R<sub>7</sub> and R<sub>8</sub> are one of the following



groups

wherein R<sub>103</sub>, R<sub>104</sub> and R<sub>105</sub> independently are H, C<sub>1</sub>-C<sub>8</sub>alkoxy,

C<sub>1</sub>-C<sub>8</sub>alkylthio, -O-C(O)-(C<sub>1</sub>-C<sub>8</sub>)alkyl, nitro, cyano, halogen, C<sub>1</sub>-C<sub>8</sub>alkyl;

and

R<sub>9</sub>, R<sub>10</sub> and R<sub>11</sub> independently are H, C<sub>1</sub>-C<sub>8</sub>alkoxy, C<sub>1</sub>-C<sub>8</sub>alkylthio, -O-C(O)-(C<sub>1</sub>-C<sub>8</sub>)alkyl, nitro, cyano, halogen or C<sub>1</sub>-C<sub>8</sub>alkyl.

17. Use of a compound of formula Ia, Ib or Ic according to claim 1 for the polymerization of ethylenically unsaturated monomers.

18. Use of a compound of formula IIa, IIb or IIc according to claim 13 together with a source of free radicals for the polymerization of ethylenically unsaturated monomers.

19. A polymer or copolymer obtainable by a process according to claim 9 or 14.